Inductors Quiz Answer Key PDF

Inductors Quiz Answer Key PDF

Disclaimer: The inductors quiz answer key pdf was generated with the help of StudyBlaze AI. Please be aware that AI can make mistakes. Please consult your teacher if you're unsure about your solution or think there might have been a mistake. Or reach out directly to the StudyBlaze team at max@studyblaze.io.

What is the primary function of an inductor in an electrical circuit?

A. Store energy in an electric field

B. Store energy in a magnetic field ✓

C. Convert AC to DC

D. Amplify signals

Describe the impact of frequency on the performance of an inductor in an AC circuit.

A. Frequency has no impact on inductors.

B. Higher frequency increases reactANCE. ✓

C. Lower frequency increases reactANCE.

D. Frequency only affects resistors.

Discuss the differences between self-inductANCE and mutual inductANCE.

A. Self-inductANCE is always greater than mutual inductANCE.

B. Self-inductANCE is the property of an inductor to induce voltage across itself. ✓

C. Mutual inductANCE only occurs in coils of the same size.

D. Self-inductANCE and mutual inductANCE are the same.

How does the core material of an inductor affect its inductANCE and efficiency?

A. Core material has no effect on inductANCE.

B. Core material affects magnetic permeability. ✓

C. All core materials are equally effective.

D. Core material only affects resistance.

What are the practical considerations when designing an inductor for a high-frequency application?

A. High-frequency inductors require larger cores.
B. Minimizing parasitic elements is crucial. ✓
C. High-frequency inductors are less efficient.
D. Core material is irrelevant at high frequencies.

Explain the concept of saturation in inductors and its effect on circuit performance.

A. Saturation increases inductANCE.
B. Saturation leads to reduced inductANCE. ✓
C. Saturation has no effect on performance.
D. Saturation only occurs in air-core inductors.

What is the main cause of core losses in an inductor?

A. Copper losses
B. Hysteresis and eddy currents ✓
C. Thermal expansion
D. Electrical resistance

Which type of inductor is adjustable?

A. Fixed inductor
B. Variable inductor ✓
C. Choke coil
D. Air core inductor

What happens to the inductIVE reactANCE as the frequency of the AC signal increases?

A. It decreases
B. It remains constant
C. It increases ✓
D. It becomes zero

Which of the following are types of inductor cores? (Select all that apply)

A. Air core ✓
B. Iron core ✓

C. Copper core
D. Ferrite core ✓

In which application are inductors commonly used to smooth out voltage ripples?

A. Oscillators
B. Filters ✓
C. Amplifiers
D. Rectifiers

Explain how an inductor stores energy in a magnetic field.

A. The energy is stored in an electric field.
B. The energy is stored in a magnetic field. ✓
C. The energy is lost as heat.
D. The energy is converted to light.

What factors affect the inductANCE of a coil? (Select all that apply)

A. Number of turns ✓
B. Core material ✓
C. Wire thickness
D. Length of the coil ✓

What are the typical losses associated with inductors? (Select all that apply)

A. Copper losses ✓
B. Core losses ✓
C. Dielectric losses
D. Thermal losses

Which characteristics define a high-quality inductor? (Select all that apply)

A. High Q factor ✓
B. Low resistance ✓
C. High core losses

D. High inductANCE stability ✓

What are the consequences of parasitic inductances in circuits? (Select all that apply)

A. Increased efficiency
B. Signal distortion ✓
C. Reduced performance at high frequencies ✓
D. Enhanced signal clarity

Which unit is used to measure inductANCE?

A. Ohm
B. Farad
C. Henry ✓
D. Watt

Which applications commonly use inductors? (Select all that apply)

A. Transformers ✓
B. Capacitors
C. Filters ✓
D. Oscillators ✓

Which symbol is commonly used to represent an inductor in circuit diagrams?

A. A zigzag line
B. A straight line
C. A coil ✓
D. A triangle

What type of core is typically used in high-frequency inductors?

A. Iron core
B. Air core
C. Ferrite core ✓
D. Steel core